An erythematous nodule on the chest

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On behalf of Dr Brooke

Thanks to Dr Green

History

85 year old Caucasian gentleman

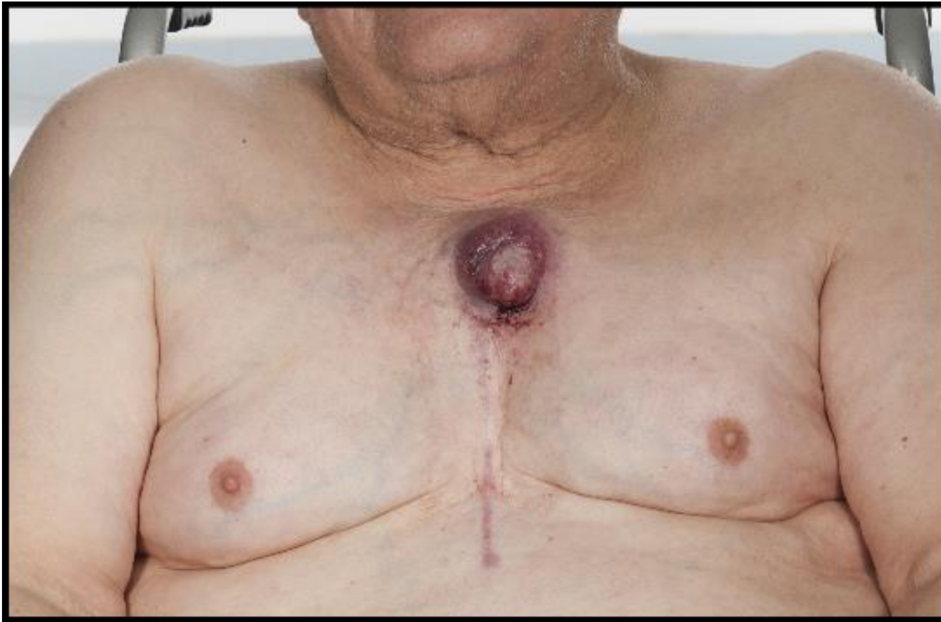
PC: Nodule on central chest

HxPC:

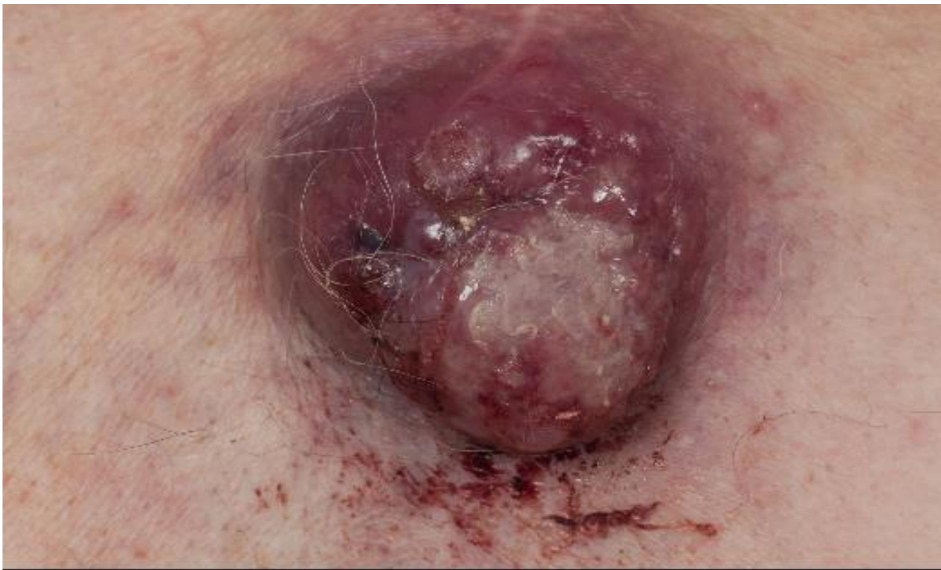
- Rapidly growing nodule on central chest (3/12)
- Non painful
- Bled in clinic

PMX: Aortic valve replacement 2010 (porcine)

DHx: Warfarin, Spironalactone, Ranitidine, Minoxidil, Finasteride, Codeine, Candesartan, Bisoprolol, Atorvasatin, Allopurinol, Loratidine and Bumetanide



- 4cm x 5cm erythematous nodule on central chest
- Non tethered
- No hepatosplenmegaly



Differential Diagnosis:

- Amelanotic melanoma
- Metastases

Management plan:

- Urgent incisional biopsy

Incisional biopsy: Histology

Micro

Dermal based tumour composed of sheets and trabeculae of malignant cells

Round basophilic nuclei, indistinct nucleoli and little cytoplasm

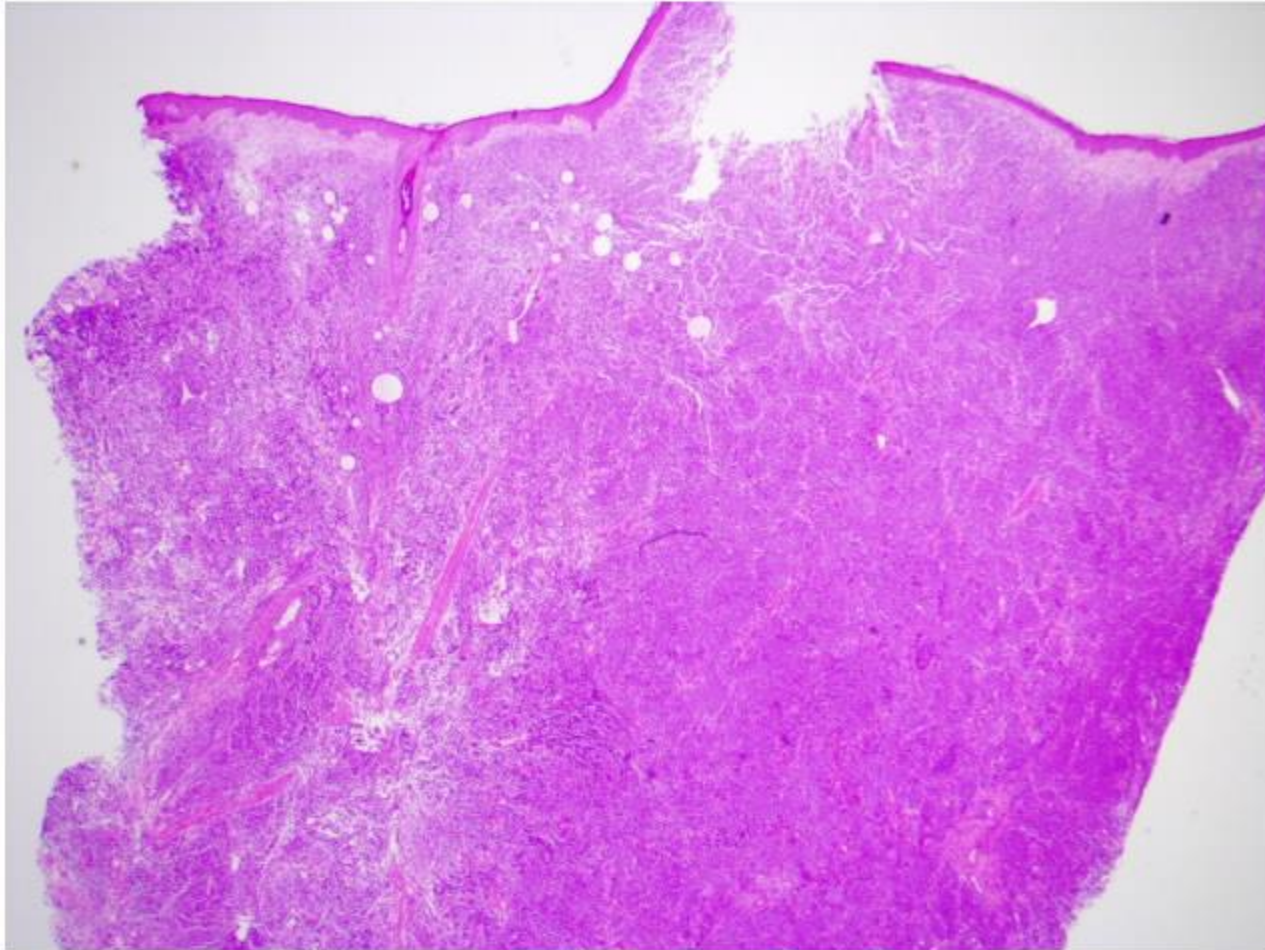
Frequent mitoses (16 per mm2)

Immunohistochemistry

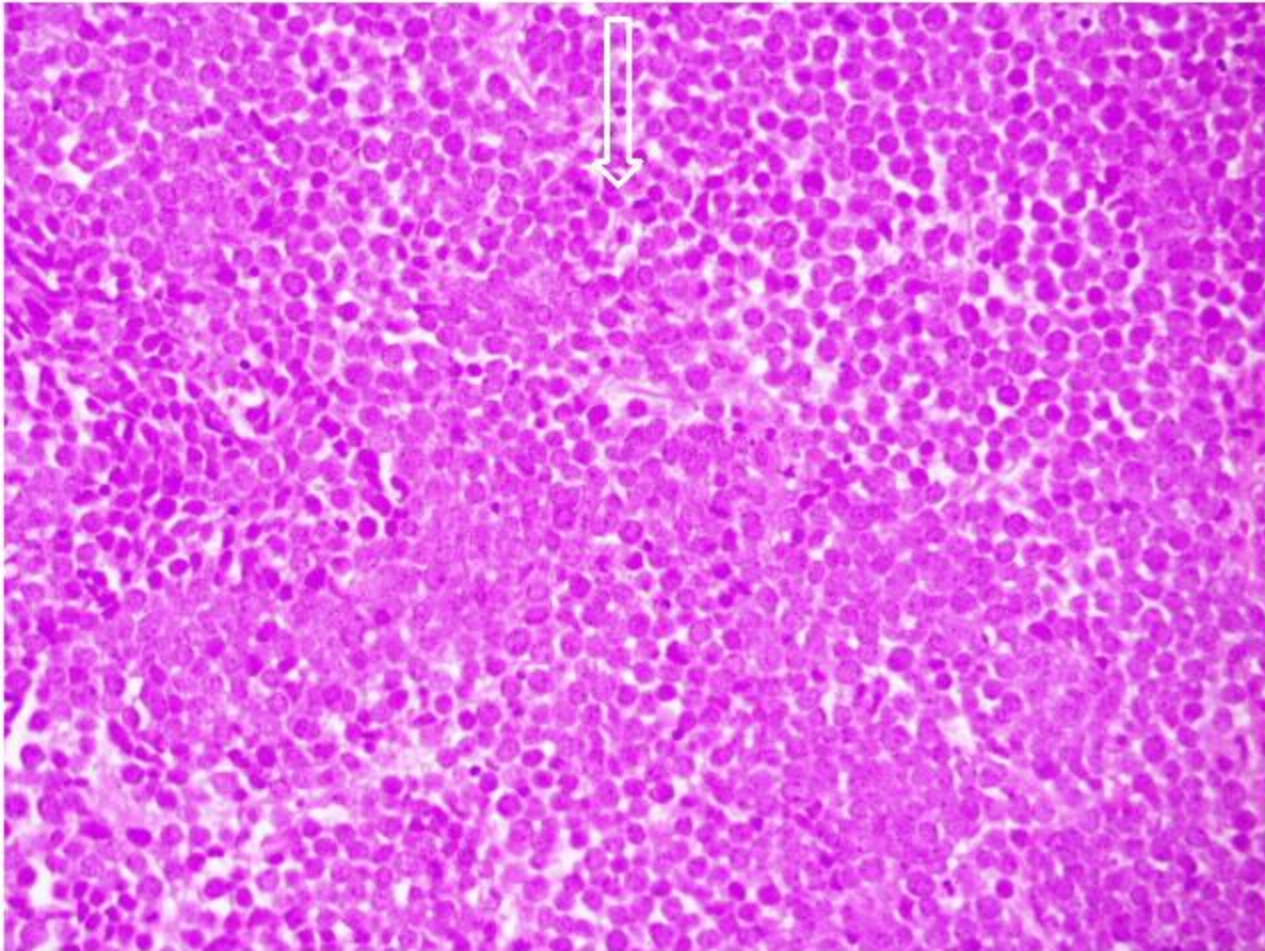
Positive	Cam 5.2	CK20	Chromogranin	Synaptophytsin	CD56
Negative	CK7	malaga	S100	TTF1	

Neuroendocrine carcinoma

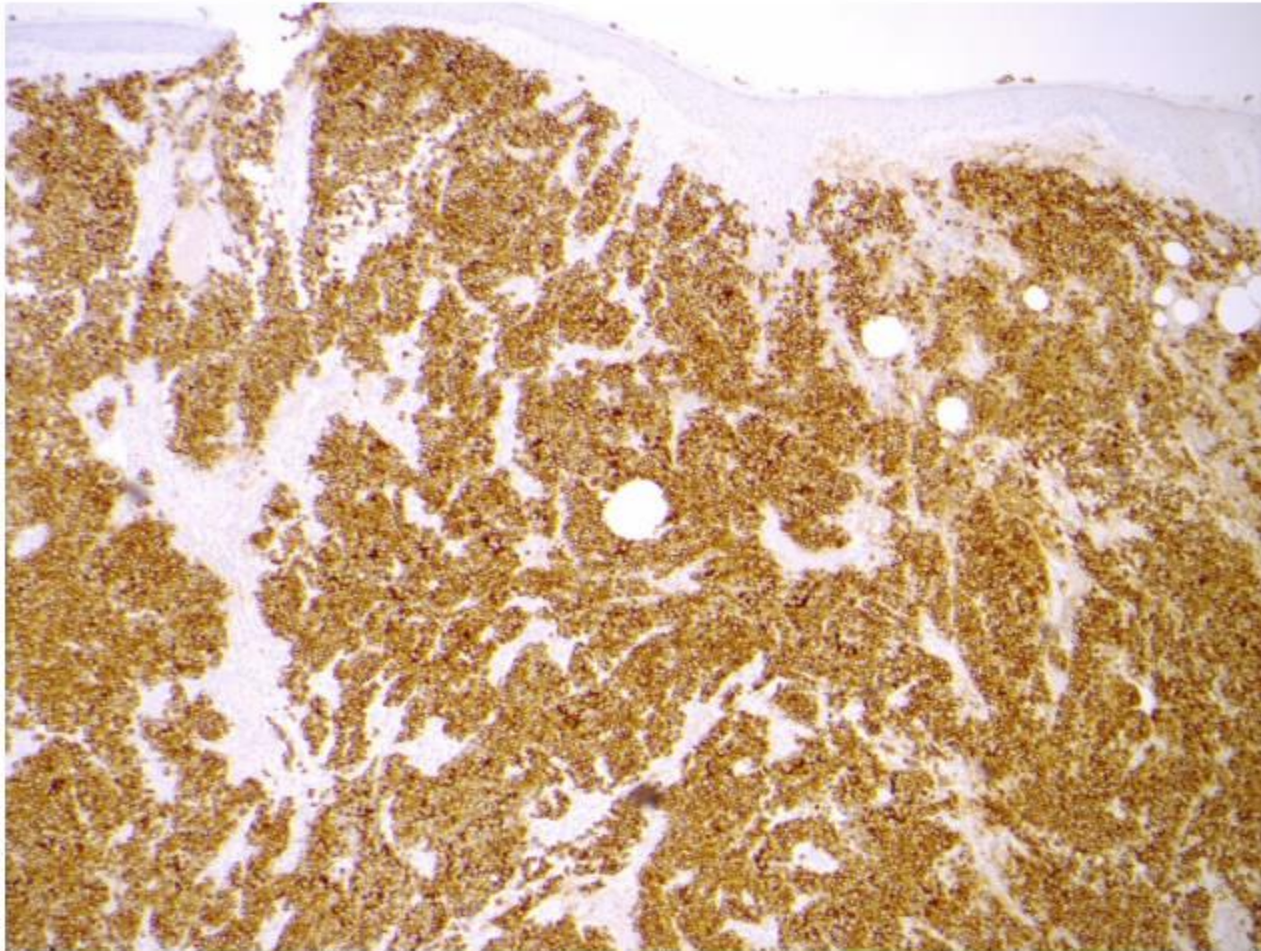
Immunohistochemistry **Merkel cell carcinoma**



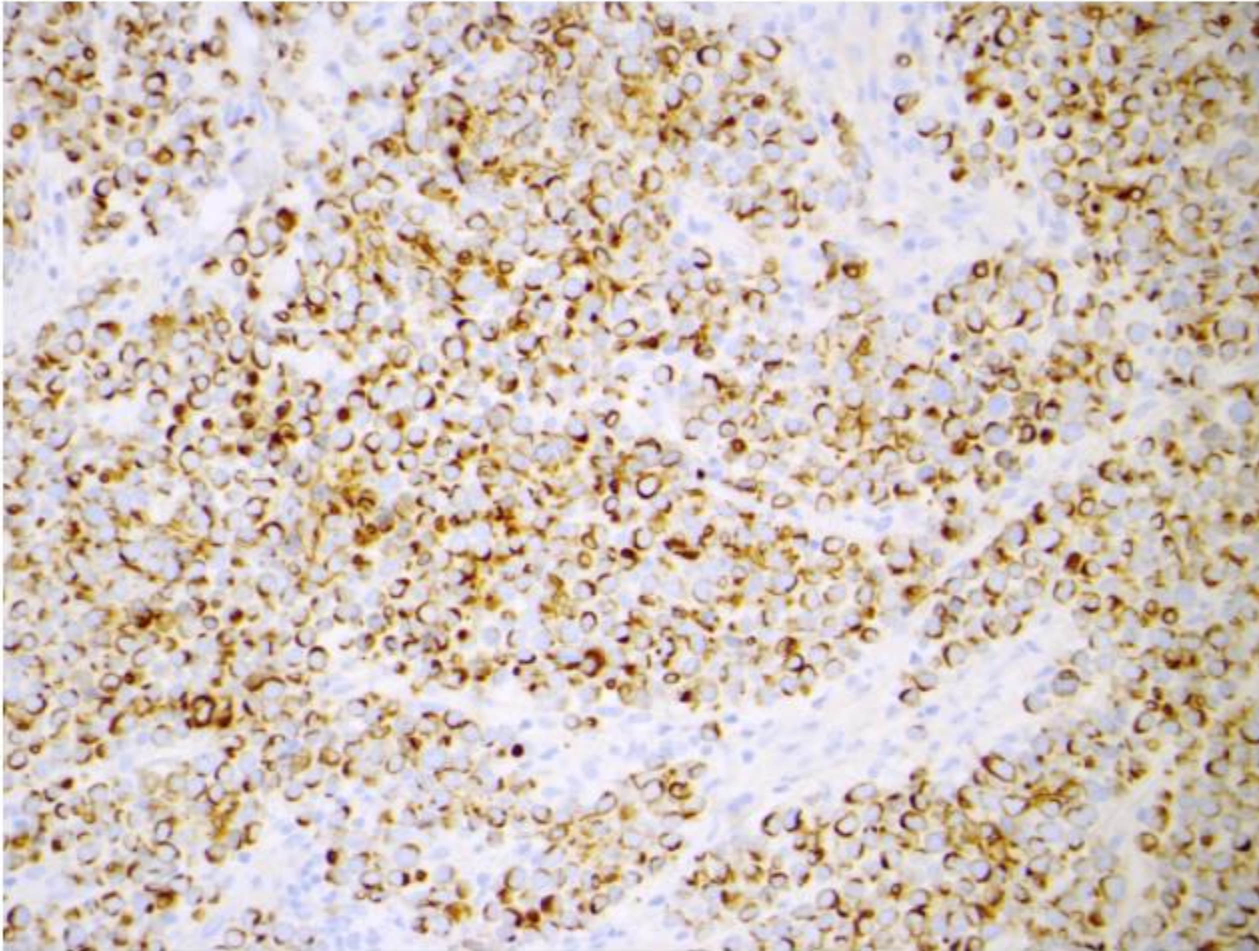
Low power (x16) view showing dermal tumour composed of sheets of basaloid cells.



Higher power view of H&E (x200) showing sheets of relatively monomorphic cells with round nuclei, small to indistinct nucleoli and little cytoplasm. Several mitoses seen (arrow)



Positive synaptophysin stain – confirms neuroendocrine



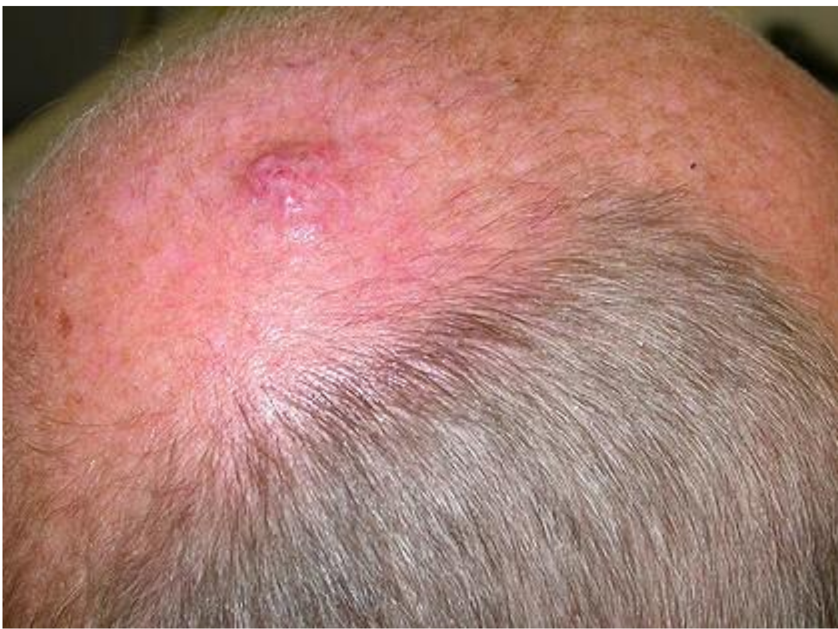
CK20 immunohistochemistry shows the typical perinuclear dot/signet ring cell staining of a Merkel cell carcinoma. (x200)

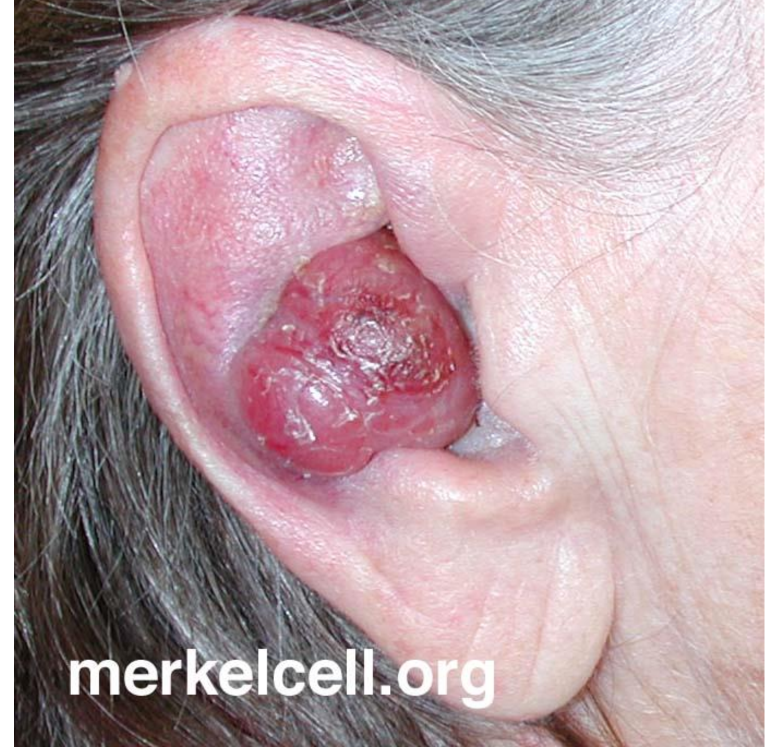
Merkel cell carcinoma (MCC)

- Rare highly malignant neuroendocrine skin
- Increasing in incidence
- 1972: Trabecular carcinoma of the skin (Toker)
- 1976: ultrastructural studies →presence of dense core granules in the cytoplasm of tumour cells
- 1980: Merkel cell carcinoma

Clinical features of Merkel cell carcinoma

- Rapidly evolving, asymptomatic, red to violaceous papule, nodule or plaque
- **Caucasian**[1]
- **Elderly** (median age of diagnosis 70)[1]
- Slight **male** predominance
- **Immunosuppression** increases risk[2]
- **Sun exposed sites**: head and neck > trunk and extremities[2]

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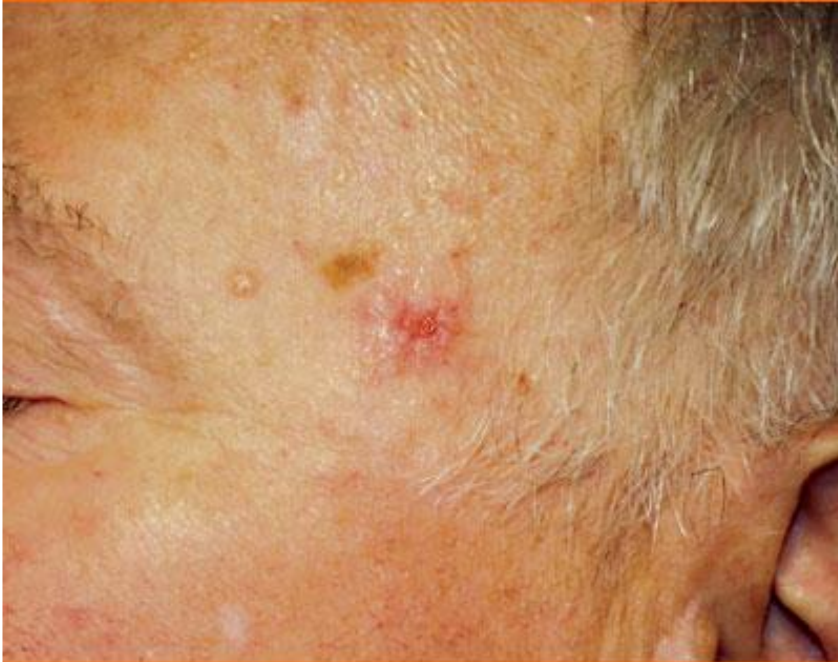
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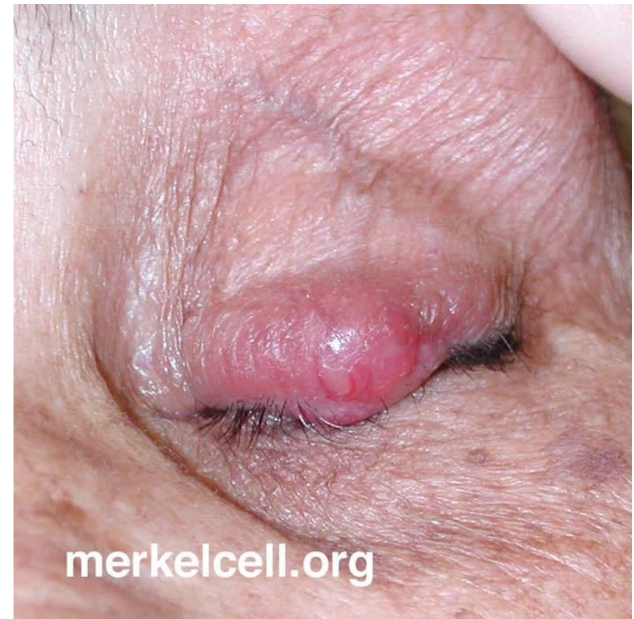
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Histopathology

- **Small round blue cell** with finely granular ("salt and pepper") chromatin and **high mitotic rate**[3]
- Small amount of cytoplasm and vague cellular borders
- Mitoses and apoptotic debris generally widespread

Immunohistochemistry

Helpful to **exclude histological mimics**[4]:

- Melanoma (S-100 protein, HMB-45, Mart-1, Sox10)
- B-cell lymphoma (CD45, CD20)
- Metastatic small cell carcinoma of the lung (CK7, TTF-1, MASH-1)

MCC immunoreactivity[5]:

CK20 , **cytokeratin CAM5.2**, NSE, neurofilament, **chromogranin** and **synaptophysin**

Immunohistochemistry

	MCC	SCLC	MM	Lymphoma
CK20	+	-	-	-
CK7	-	+	-	-
Vimentin	-	-	+	+
NSE	+	+	-	-
S100	-	-	+	-
LCA	-	-	-	+
TTF-1	-	+	-	-

Merkel Cell Polyomavirus (MCV)

- Initially identified in 2008 by Feng et al
- 70-80% of MCCs positive for MCV[6]
- Viral and non viral aetiology
- Viral dependent → trunk
- Viral independent →UV exposed sites[7]
- The effect of MCV on prognosis unclear[8]

Prognosis

10 year survival

- 71% localised disease
- 48% regional disease
- 20% distant disease

- Recurrence rate approx. 25% (usually within two years)[9]

Treatment

- **Surgical excision**:

  1 cm margins tumours < 2 cm

  2 cm margins tumours > 2 cm
- **Sentinel lymph node (SLN) biopsy**
- Completion **lymph node dissection** if +ve SLN[10]
- **Adjuvant radiotherapy** (exception cases at lowest risk)

Summary

- Highly aggressive neuroendocrine tumour that is increasing in incidence
- Tumour of the elderly
- Involves the head, neck, and extremities
- Risk factors: UV radiation, immunosuppression and Merkel cell polyomavirus (MCV) infection.
- Histology: small round blue cell with finely granular (“salt and pepper”) chromatin and high mitotic rate.

Summary

- Immunostains to exclude histologic mimics
- MCV-dependent and MCV-independent pathways of development
- Treatment is by surgical excision with sentinel lymph node biopsy, often with adjuvant radiation therapy
- Prognosis is poor with frequent lymph node involvement, recurrences, and dissemination

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